PEO-GCS Website:
www.peogcs.army.mil

# TACOM LCMC Advance Planning Briefing to Industry

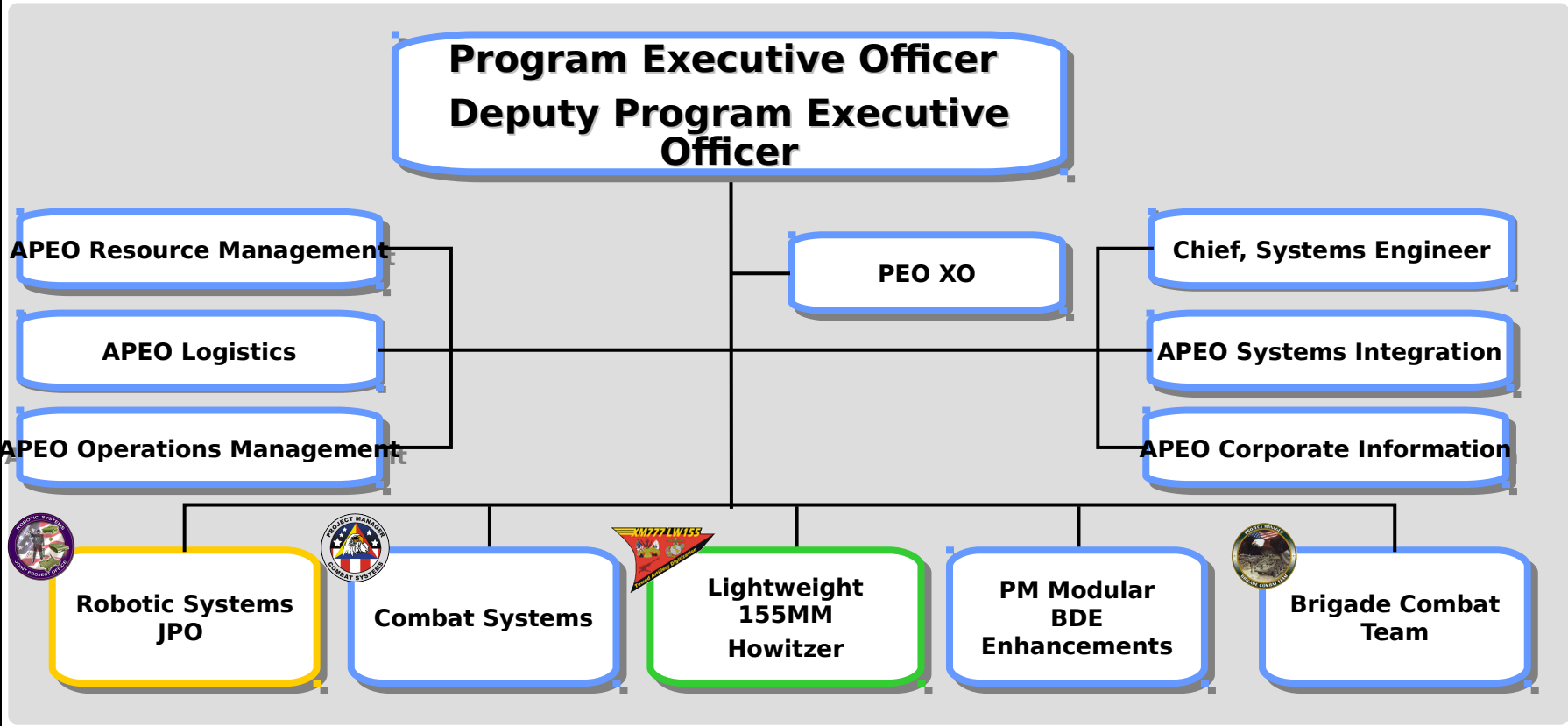
Program Executive Office
Ground Combat Systems

*Acquisition Excellence*

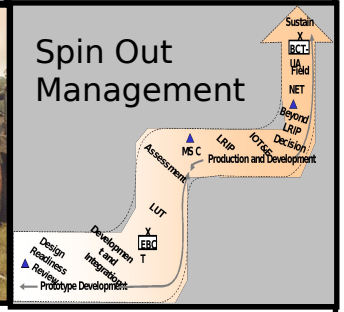
Mr. Kevin Fahey
Program Executive Officer,
Ground Combat Systems

October 28, 2005

# Program Executive Office, Ground Combat Systems Structure



# Program Executive Office Ground Combat Systems

| Stryker Brigade Combat Team | Combat Systems | Joint Robotics Systems (Army & Marine) | Joint Lightweight Howitzer 155mm (Army & Marine) | Modular Brigade Enhancements |
|---|---|---|---|---|
| | • Abrams Tank<br>• Bradley Fighting Vehicle<br>• Paladin / FAASV<br>• M113 | | | |
| | | | |  |

PEO GCS maintains a total Army perspective in managing the development, acquisition, testing, systems integration, product improvement, and fielding that places the best ground combat systems in the hands of our soldiers

# PEO GCS Managed Systems

## Combat Systems

- Abrams Tank
- Bradley Fighting Vehicle FOV
- Paladin 155mm SP Howitzer
- M113 FOV
- M707 Knight

## Robotic Systems

- UA Ground Systems
- Standardized Robotic System
- Gladiator
- M60 Panther
- Miniflail
- Man Packable
- MV – 4 Flail

## Stryker Brigade Combat Team

- Mobile Gun System
- Infantry Carrier Vehicle
- Medical Evacuation Vehicle
- Reconnaissance Vehicle
- Commander's Vehicle
- Engineer Squad Vehicle
- NBC Reconnaissance Vehicle
- Mortar Carrier
- Anti-tank Guided Missile
- Fire Support Vehicle

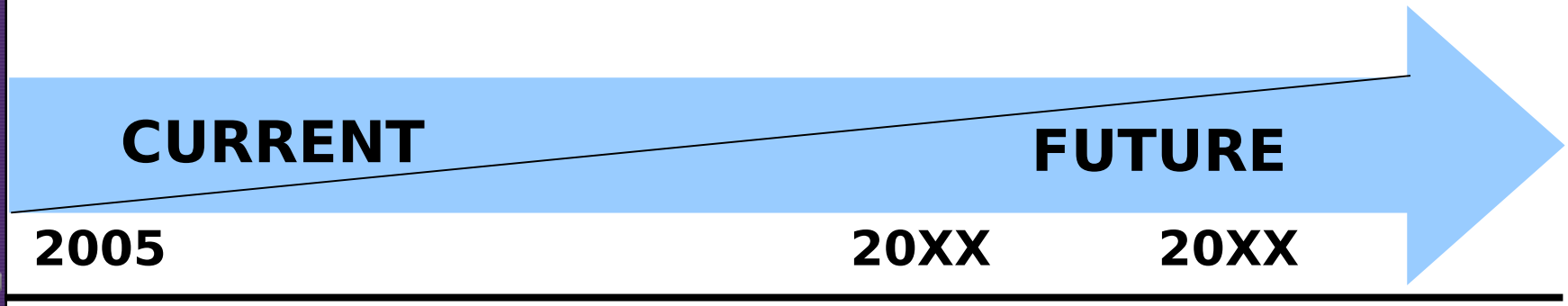
## LW155 System

- M777 Howitzer
- Towed Artillery Digitization (TAD)
- M119 production

# PM Combat Systems
# APBI

Larry D.
Hollingsworth
Colonel, Infantry
Project Manager

# Synchronized Through 2050




**MODULARITY**

**MODERNIZATION**

**SUSTAINMENT**

**RESET**

**RECAP**

- **Requires Partnerships with Industry and RDECOM**
- **Requires Centralized Management and Oversight**
- **Requires Balance between Current and Future**
- **Requires Centralized Funds Management (OMA and PAA)**

# TSM Abrams / PM Priorities

- (1) Safety Mods - (Complete by FY07)
- Modularity - 18/17 Production
- Sustainment/Recapitalization
  - AIM M1A1, M1A2 System Enhancement Package (SEP)
  - Continuous Electronic Enhancement Program (CEEP) Retrofit (588)
  - Transmission/Track Durability
  - VCSU Silent Fan
  - Voltage Regulator
  - 80GB Removable Memory Cartridges (RMC)
- Lethality
  - (2) 2nd Gen Forward Looking Infrared Radar (FLIR) for M1A1
  - (3) Ammunition Integration Canister, Mid Range Munition (MRM)
- Survivability
  - (4) Tank Urban Survivability Kit
  - (6) Belly Armor
  - Under Armor Auxiliary Power Unit (UAAPU)
- Situational Awareness
  - (5) Helmet Mounted Display/Cordless Command & Control
  - (4) Driver's Vision Enhancer
- Modernization
  - (7) Vehicle Integrated Defense / Active Protection
  - Spin Out Hardware & Integration
  - Overmatch Capabilities
  - Advanced Armor
  - Training Devices

**( ) TSM Priori**

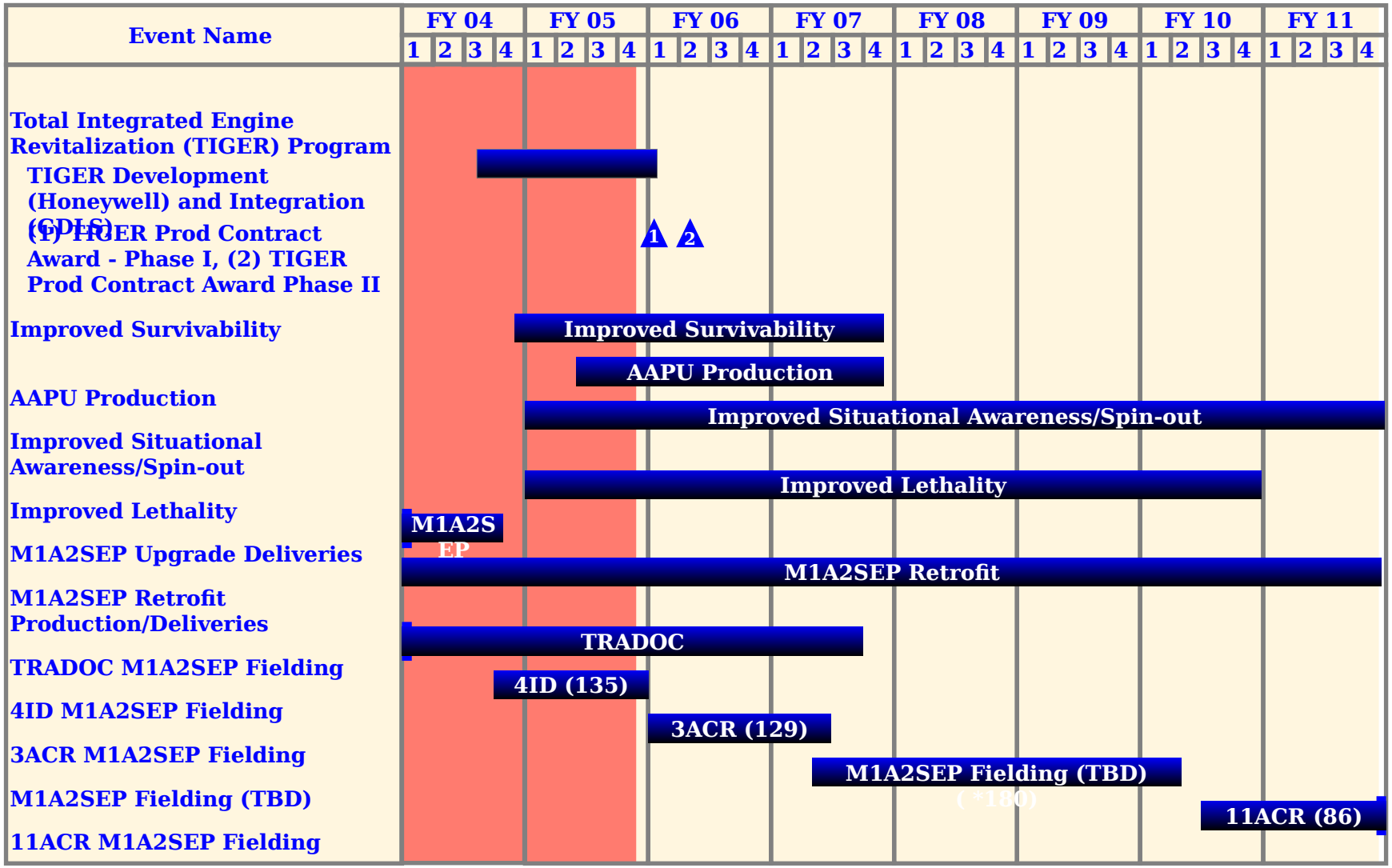
# TSM 1-N Priority Bradley

- 18 / 17 BCTs (A3 / Operation Desert Storm ODS)
- ODS Situational Awareness (2nd Gen FLIR)
- ODS Embedded Diagnostics
- Mobility
  - Power Train
  - Track
- Survivability
  - Bradley Urban Operations Kit (BUSK)
  - IED Protection
- Lethality
  - Missile Integration
  - Multi purpose 25 MM
  - Soldier as a System Integrator
- Bradley Integrated Management (BIM)
- Engineer Vehicle Mission Equipment Package
- Training Devices
- Test Measurement Diagnostic Equipment (TMDE)

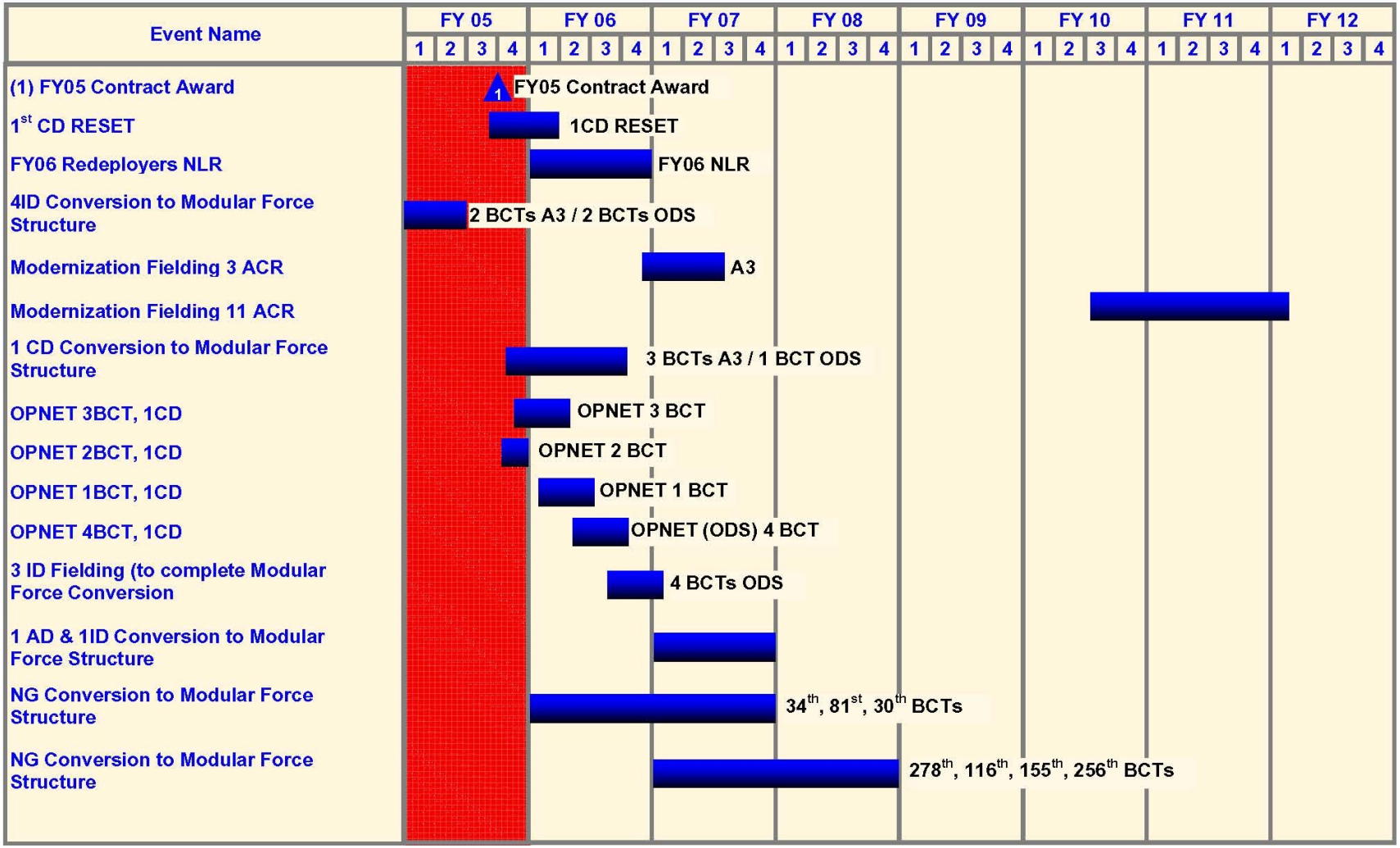
# Other Requirements

- Paladin
  - RESET
  - RECAP
  - Fire Support Combined Arms Tactical Trainer
- Knight
  - Chassis Change
- BFIST
  - Fire Support Sensor System (FS3) Integration
  - Bradley Desktop Trainer

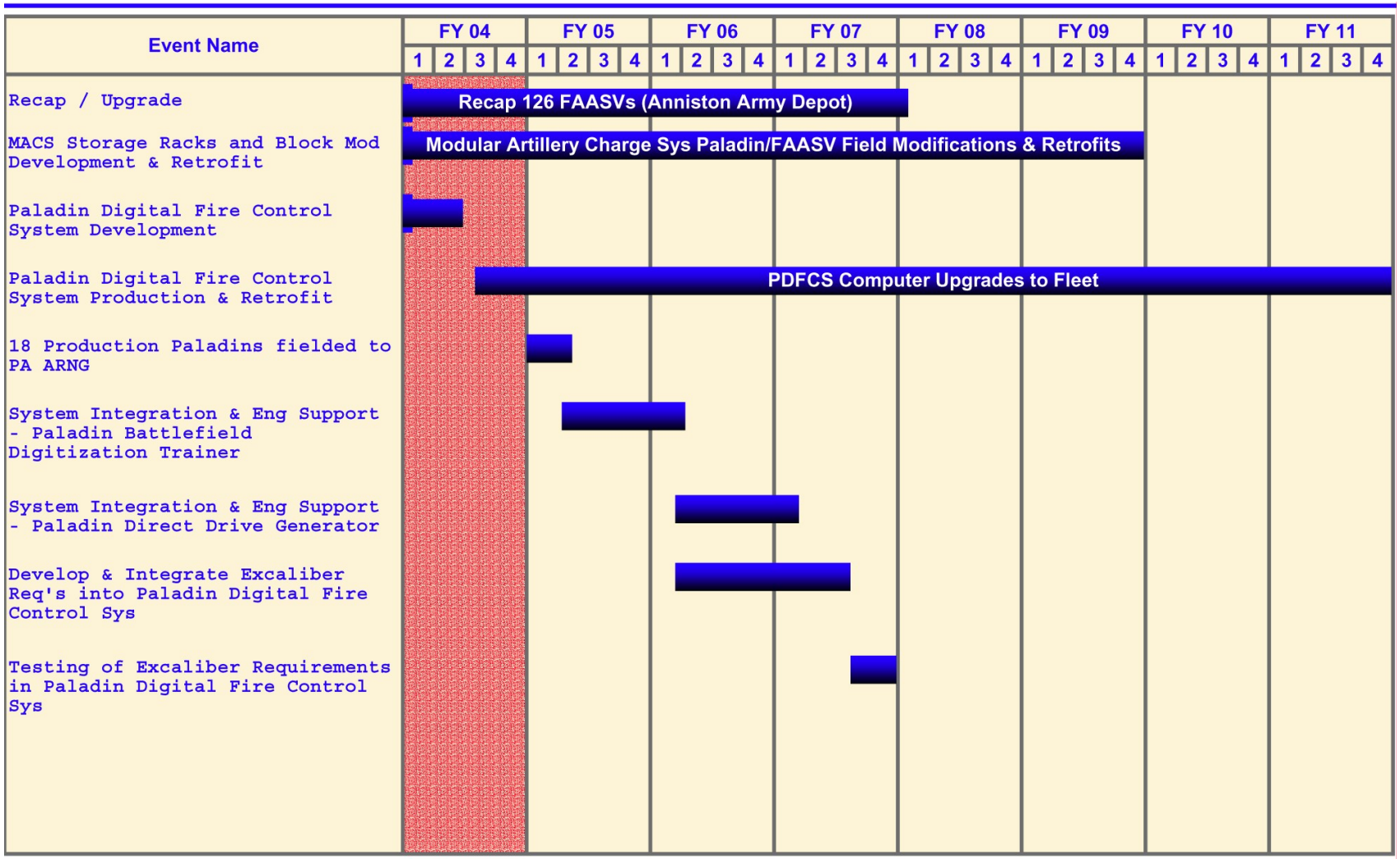
# Abrams Program Schedule



# Bradley Program Schedule


Event Name
FY 05
FY 06
FY 07
FY 08
FY 09
FY 10
FY 11
FY 12
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4
(1) FY05 Contract Award
FY05 Contract Award
1st CD RESET
1CD RESET
FY06 Redeployers NLR
FY06 NLR
4ID Conversion to Modular Force Structure
2 BCTs A3 / 2 BCTs ODS
Modernization Fielding 3 ACR
A3
Modernization Fielding 11 ACR
1 CD Conversion to Modular Force Structure
3 BCTs A3 / 1 BCT ODS
OPNET 3BCT, 1CD
OPNET 3 BCT
OPNET 2BCT, 1CD
OPNET 2 BCT
OPNET 1BCT, 1CD
OPNET 1 BCT
OPNET 4BCT, 1CD
OPNET (ODS) 4 BCT
3 ID Fielding (to complete Modular Force Conversion
4 BCTs ODS
1 AD & 1ID Conversion to Modular Force Structure
NG Conversion to Modular Force Structure
34th, 81st, 30th BCTs
NG Conversion to Modular Force Structure
278th, 116th, 155th, 256th BCTs

# Paladin/FAASV Program Schedule


Event Name
FY 04
FY 05
FY 06
FY 07
FY 08
FY 09
FY 10
FY 11
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4
Recap / Upgrade
Recap 126 FAASVs (Anniston Army Depot)
MACS Storage Racks and Block Mod Development & Retrofit
Modular Artillery Charge Sys Paladin/FAASV Field Modifications & Retrofits
Paladin Digital Fire Control System Development
Paladin Digital Fire Control System Production & Retrofit
PDFCS Computer Upgrades to Fleet
18 Production Paladins fielded to PA ARNG
System Integration & Eng Support - Paladin Battlefield Digitization Trainer
System Integration & Eng Support - Paladin Direct Drive Generator
Develop & Integrate Excaliber Req's into Paladin Digital Fire Control Sys
Testing of Excaliber Requirements in Paladin Digital Fire Control Sys

# Other Combat Systems Challenges & Opportunities for Industry

- Situational Awareness
  - Integration of New Technologies to achieve interoperability with Future Combat System
  - Mounted Battle Command on the Move (MBCOTM)

- Survivability
  - Vehicle Integrated Defense Systems/Active Protection Systems
  - Loader and TC Weapon Station Improvements
  - Armor improvements/Active Armor

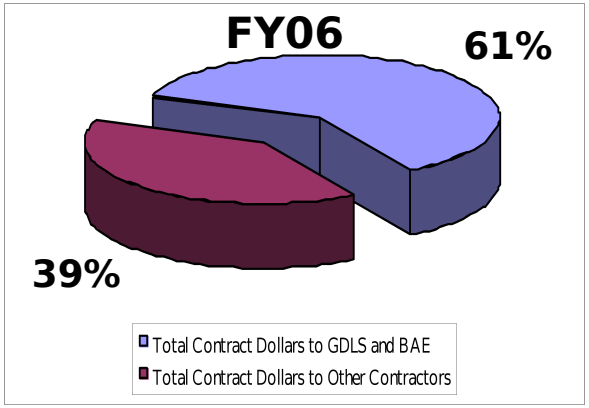
- Lethality
  - Muzzle Velocity System
  - Mid - Range Munition (MRM)
  - Multi function Laser Range finder
  - Target Management System
  - 3rd Gen Forward Looking Infrared Radar (FLIR)

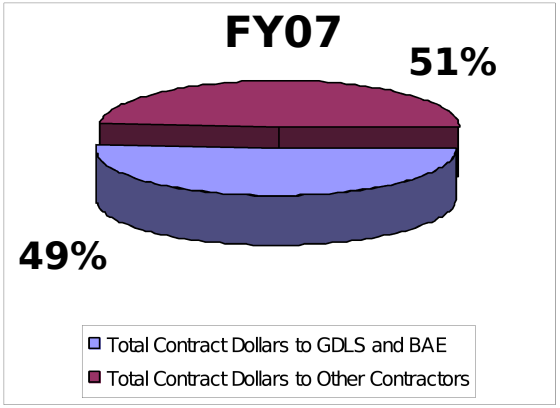
# Combat Systems Challenges & Opportunities for Industry

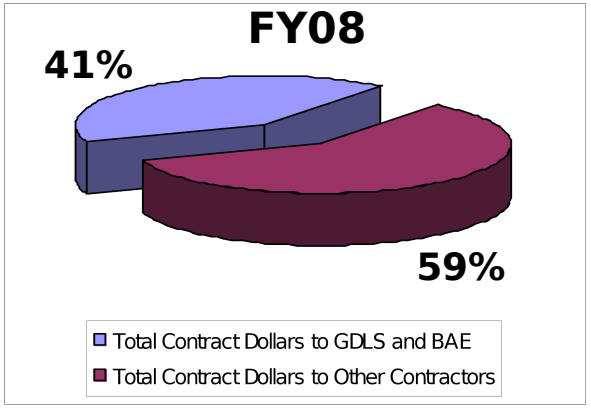
- Mobility
  - Auxiliary Power Unit (APU)
  - Power Pack Durability Improvements
  - Suspension Durability Improvements
  - Hybrid Electric Drive
  - Improved Driver's Viewer

- Sustainment
  - Recapitalization
  - Reset combat equipment returning from OIF
  - Maintaining Vehicles that are not deployed with the troops (Stay behind Maintenance)
  - Embedded Diagnostics/Prognostics
  - Embedded Training
  - Electronics Obsolescence

# Combat Systems Contractor Dollars
## FY06 – FY08



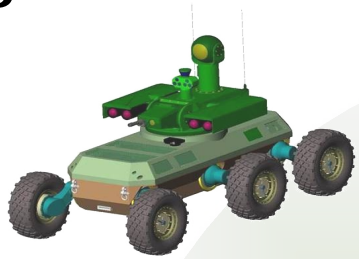




| DOLLARS IN M | | | | | |
|---|---|---|---|---|---|
| | **Total Contract Dollars** | **Total Contract Dollars to go to GDLS & BAE** | **Percent of Contract Dollars for GDLS & BAE** | **Total Contract Dollars to go to Other Contractors** | **Percent of Contract Dollars for Other Contractors** |
| FY 06 | 608.6 | 238.6 | 39% | 370.0 | 61% |
| FY 07 | 554.5 | 269.9 | 49% | 284.6 | 51% |
| FY | | | | | |

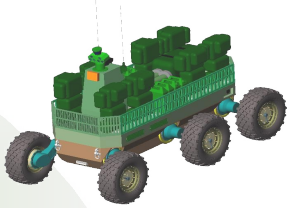
# Robotics

Terry W. Griffin
Colonel, USMC
Project Manager

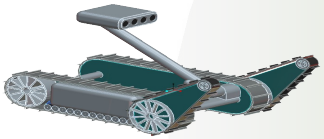
# JPO Robotic Systems (FCS)



**Armed Robotic Vehicles-Assault-Light (ARV-A-L)**



**Multifunctional Utility/Logistics and Equipment MULE-Transport**



**Small Unmanned Ground Vehicle (SUGV)**

**Dismounted Controller**

**Countermine-Mule**

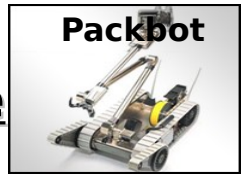
**Armed Robotic Vehicles ARV-RSTA**

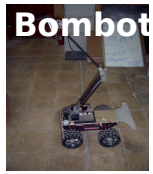
**Armed Robotic Vehicles ARV-Assault**

# JPO Robotic Systems (Non FCS)

Program Executive Office Ground Combat Systems

## Joint Force






- IED Defeat Syste
- In Theater Log
- Joint Facility

## USMC

- Lethal / Non-lethal Firi
- RSTA
- NBC Detection

- M1 Chassis
- Mine Plow, Lane Markin
- MICLIC

- FIDO Explosives Sniffer
- Disrupter
- Dump Bed

## Army

- AP Mine Neutralization
- Wire Obstacle Breaching
- Engineer Missions

- Mine Neutralization
- Contingency Systems
- Europe / OIF / OEF

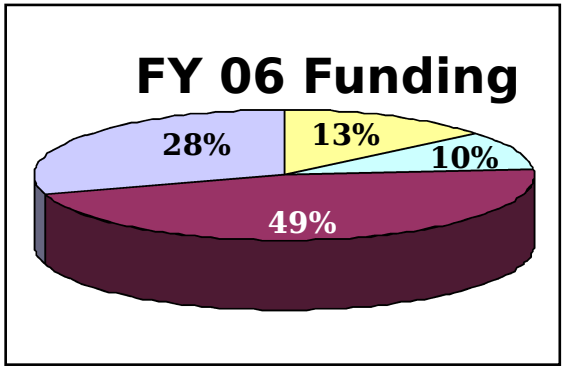
# List of RSJPO Robotic Technology Needs

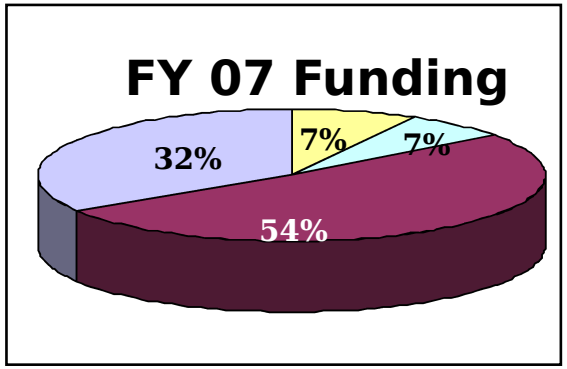
- Autonomous Mobility Performance, Articulation, Mobility Algorithms
- Semi-Autonomy in Environments with Moving Persons and Vehicles
- Autonomous Navigation in Adverse Weather
- Autonomous Navigation Capability against Negative Obstacles
- Autonomous Navigation System Weight and Space Requirements
- Adequate System Control Devices
- Non-Line-of-Sight Communications Capabilities
  - Digital Communications
  - Networked Communications
  - Low Latency Global Reach Communications
  - Extended Data Link
  - Limited RF Spectrum Allocations
  - High Bandwidth
- UGV Reliability / Availability
- Anti-Tamper Capability
- Lightweight, Rugged Components
- Improved Battery Technology for Extended Duration and Life
- Non-Active (Stereo) Perception

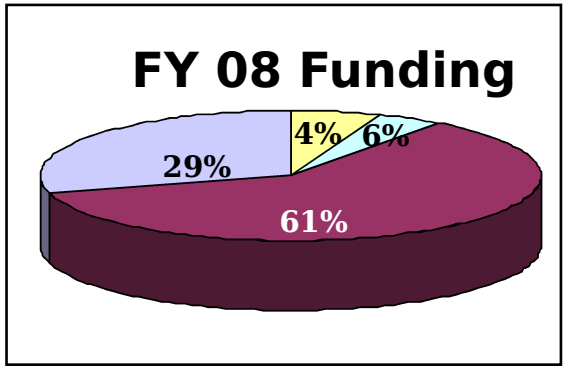
# Autonomous Systems Challenges & Opportunities for Industry

- Autonomous Mobility
- Autonomous Mobility Performance
- Perception Safety (Moving Persons and Vehicles)
- Navigation Challenges (Adverse Weather, Negative Obstacles)
- System Control Devices
- Autonomous Operations
- Non-Line-of-Sight Communications
- Non-Active (Stereo) Perception
- Reliability/Availability
- Anti-Tamper Capability
- Lightweight, Rugged Components
- Improved Battery Technology

# RS JPO Contract Dollars
## FY 06 – FY 08




Total Army – Other
Total Army – FCS
USMC
OSD

| Dollars in M | USMC | OSD | ARMY | ARMY- FCS Subcontractors |
|---|---|---|---|---|
| FY 05 | 4.513 | 21.3 | 18 | 55.397 |
| FY 06 | 25.65 | 17.9 | 55 | 86.445 |
| FY 07 | 16.604 | 13.9 | 70.5 | 106.341 |
| FY 08 | 11.484 | 7.8 | 56.8 | 116.608 |

**Totals Include Both RDT&E and Procurement Dollars**

# Stryker

Peter N. Fuller
Colonel, AR
Project Manager

# Stryker Family of Vehicles

Commander's Vehicle (CV)

Fire Support Vehicle (FSV)

Infantry Carrier Vehicle (ICV)

Mobile Gun System (MGS)

Reconnaissance Vehicle (RV)

**Commonality**

**Common Operating Picture**

**Common Chassis & Drive Train**

**Common KPP's**

**Common Survivability**

**Common TMDE, Spare Parts, Tools & Skills**

NBC Reconnaissance Vehicle (NBCRV)

Medical Evacuation Vehicle (MEV)

120mm Mounted Mortar Carrier (MC-B)

Engineer Squad Vehicle (ESV)

Anti Tank Guided Missile (ATGM)

# SBCT Fleet Management Strategy

**CURRENT** → **FUTURE**

**2005** — **2011**

**2016** — **2050**

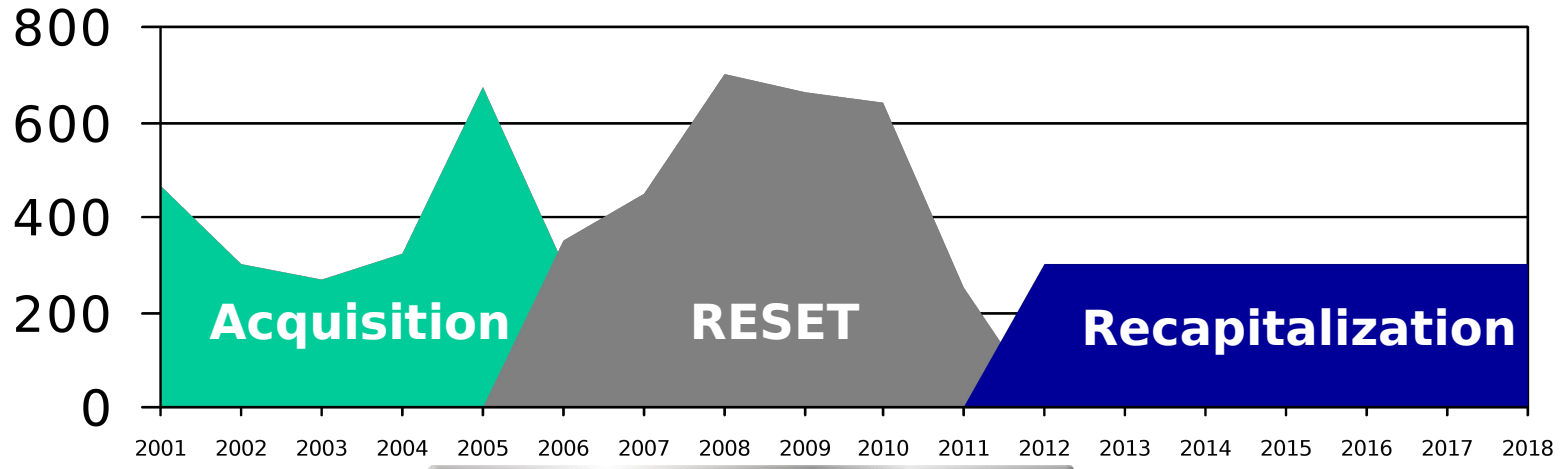
**ACQUISITION**

**MODERNIZATION**

**SUSTAINMENT**

**RESET**

**RECAP**



# Stryker 1 – N List

## TRADOC Approved

- Survivability
  - Active Protection System
  - IED Survivability
  - Crew Panoramic Awareness
- Environmental Control - Vehicle/C4 and/or Soldiers
- Power Management / Data Bus
  - Stabilize Power
  - Alternate Power
  - Soldier Battery Recharge
- Soldier as A System Integration - Land Warrior
- Semi Active Suspension - CTIS
- Improved Embedded Training Capability - Combat Maintainer Tasks
- Improved C4ISR Integration
  - Battle Command on the Move
  - Squad Communication to the Vehicle
  - Land Warrior
- Common Logistics Operating Environment (CLOE)
- Stryker Integrated Maintenance (SIM)

# Stryker Challenges & Opportunities for Industrv

- Communications:
  - Robust digital capability ensures near-seamless communications
  - Real time situational awareness and distribution of information

- Survivability:
  - Residual mobility virtually eliminates vehicle and personnel losses due to follow on attacks
  - High hard steel structure / MEXAS ceramic armor/ Spall liner
  - Holistic survivability and force protection
  - Common Ballistic Shield Enhancement

# Stryker Challenges & Opportunities for Industry

- Mobility:
  - Improved Digital Video Effect (DVE)
  - C-130 Deployable
  - Decisive Offensive action – dismounted Infantry assault enabled by fires and platforms
- Sustainment:
  - Battle Damage Repair Facility – Qatar
    - Regenerate Combat Power in Theater
    - Vehs. are immediately replaced in unit formation
  - RESET program w/Core Depot support

# Stryker Challenges & Opportunities for Industry

- Interoperability:
  - Capable of Hosting and Integrating C4ISR Systems (EPLRS, FBCB2, ABCS).
  - Integrate Specific C4ISR Systems into Stryker Platforms IAW Systems Architecture

- Supportability:
  - Field and National Level Maintenance (limited wrench turning by contractor)
  - Co-located capability with unit – home station and during deployment
  - Spare Parts (including selected GFE)
  - Maintenance Augmentation After Unit is Trained
  - 90% minimum ORR during and after NET

# Stryker Challenges & Opportunities for Industry

- Flexibility:
  - Missions range from mounted and dismounted peacekeeping and patrolling to full-scale urban combat



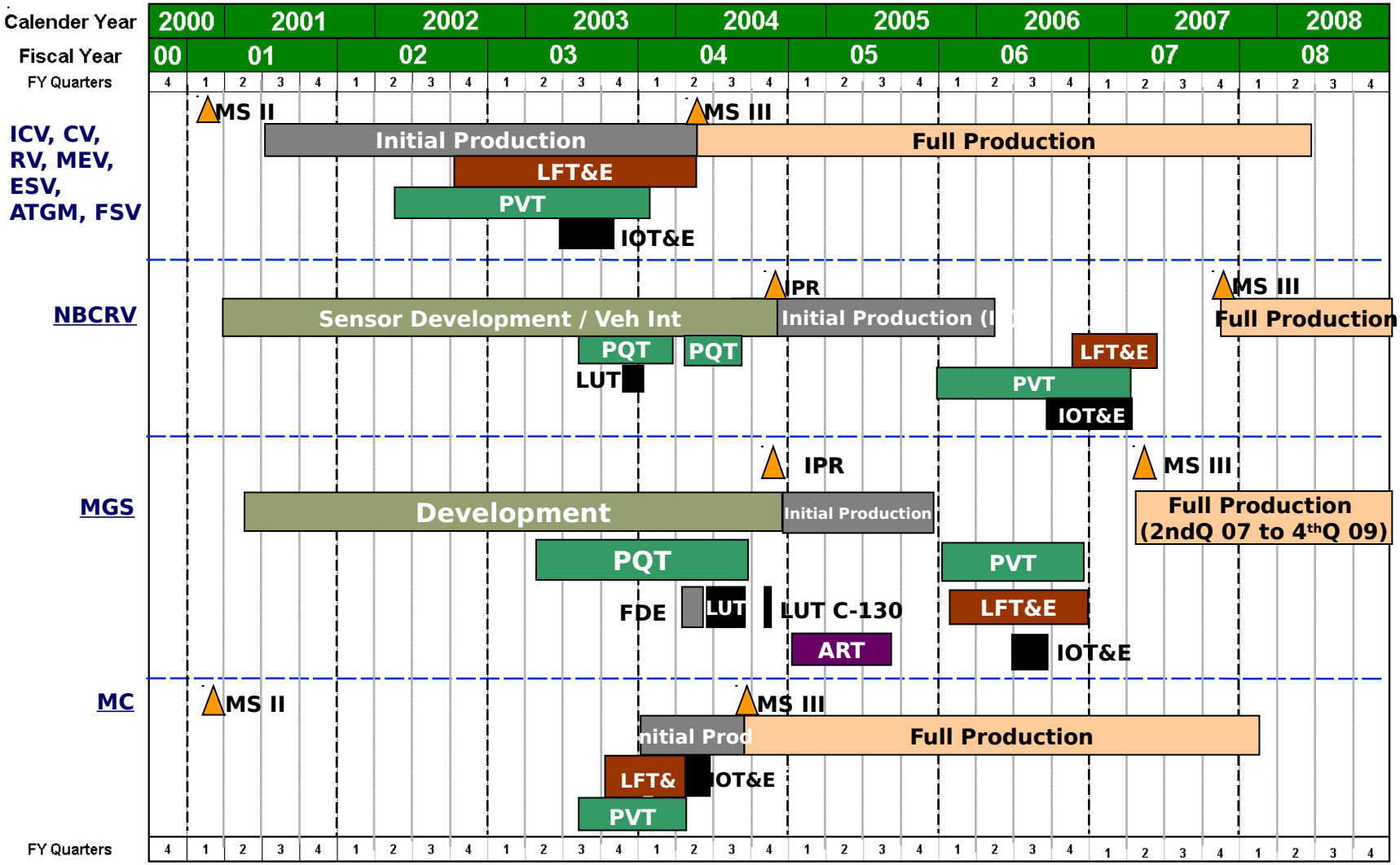
- Lethality:
  - Organic combined arms lethality
  - Baseline target acquisition is “point and shoot”



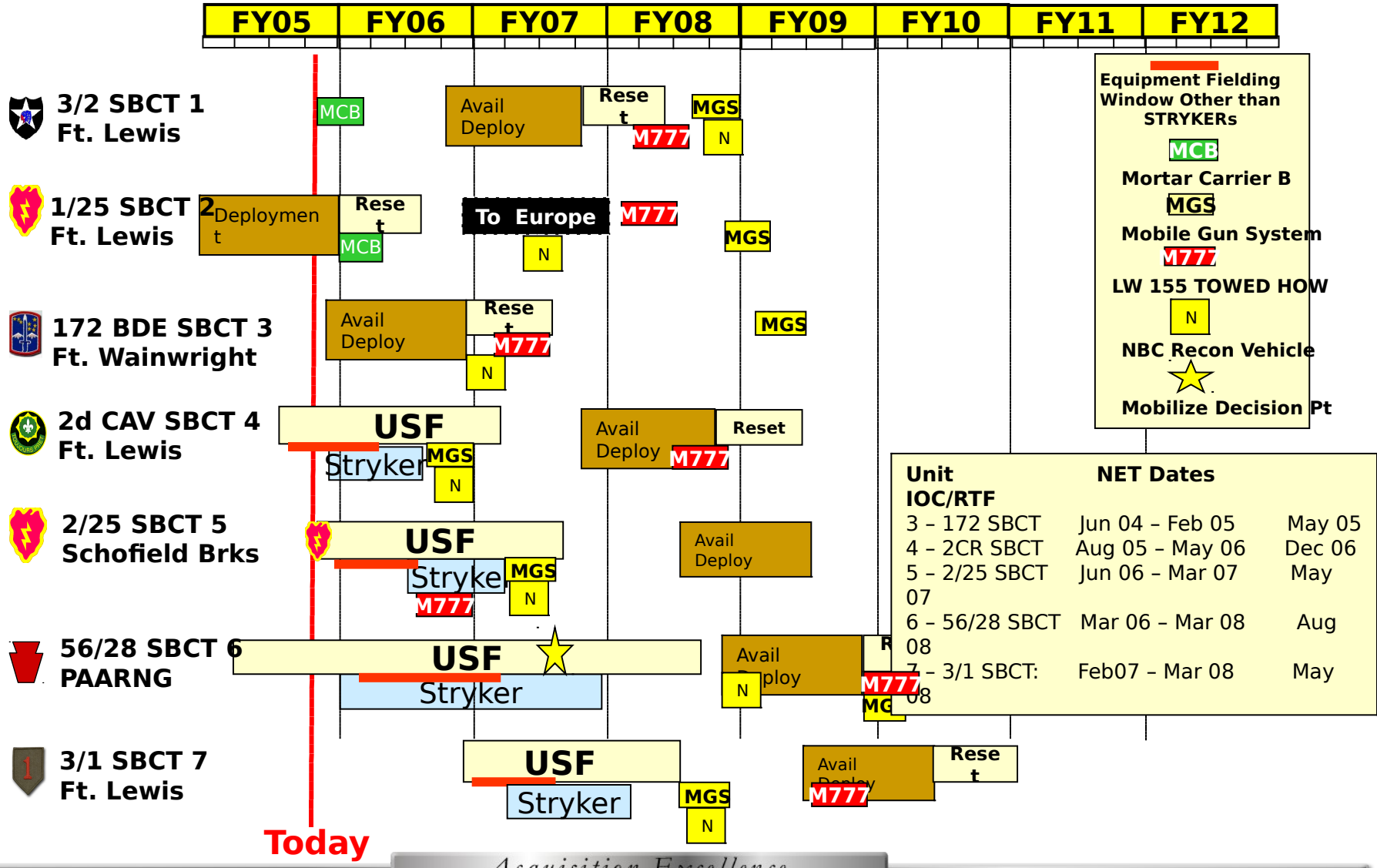
- Industry Potential:
  - Register with GDLS to become an authorized supplier/sub-contractor
  - Contact DOD E-Mall to become an authorized supplier

# Stryker Program Schedule

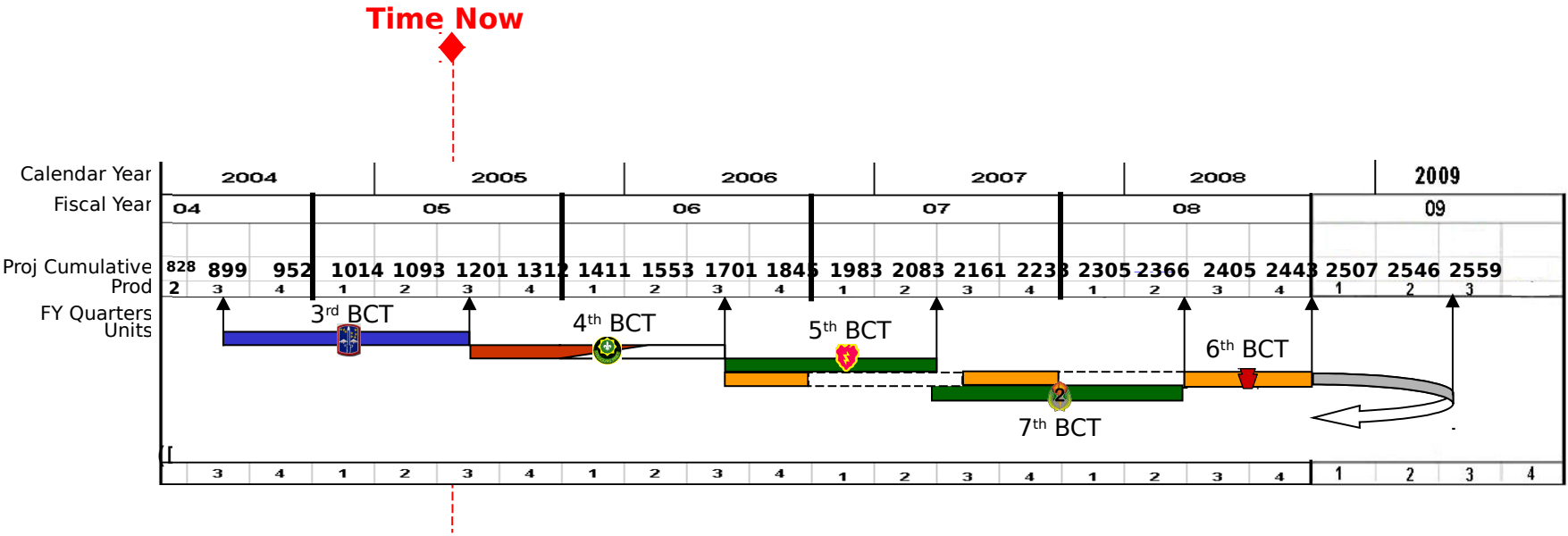
## August 05



# Life Cycle Management

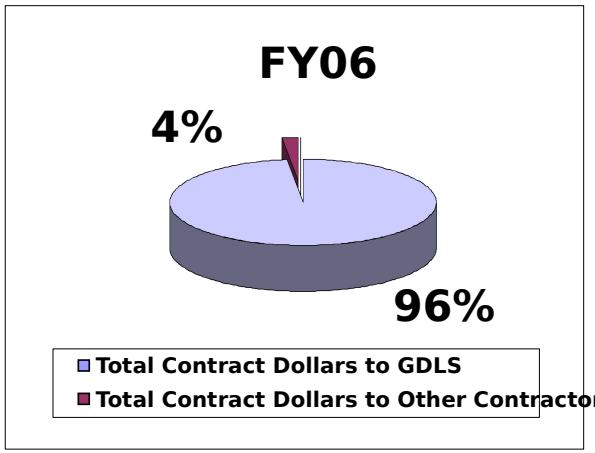


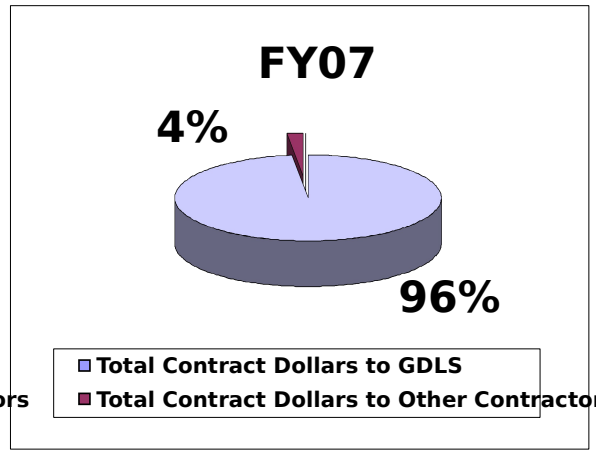
# Stryker Fielding Plan

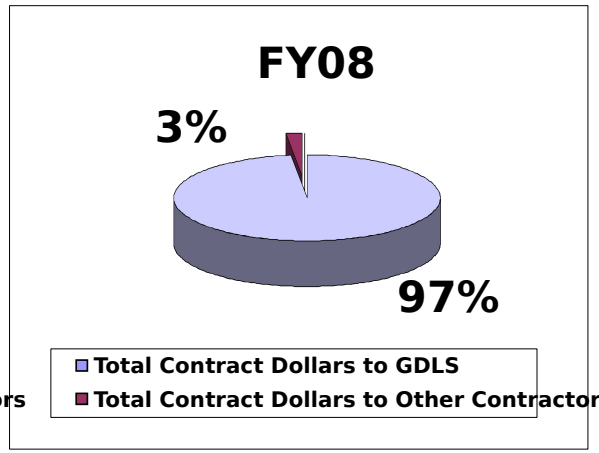


# Stryker Contractor Dollars

## FY06 – FY08




| DOLLARS IN M | | | | | |
|---|---|---|---|---|---|
| | Total Contract Dollars | Total Contract Dollars to go to GDLS | Percent of Contract Dollars for GDLS | Total Contract Dollars to go to Other Contractors | Percent of Contract Dollars for Other Contractors |
| FY 06 | **1018.238** | **976.821** | **96%** | **41.417** | **4%** |
| FY 07 | **879.161** | **848.134** | **96%** | **31.026** | **4%** |
| FY 08 | **861.044** | **834.323** | **97%** | **26.721** | **3%** |

***WTCV: Does not include GFE/GFM.***
***OMA/Deployment/GWOT: Assumes reset, re-deployment, battle damage repair facility***
***OMA/PBL/TRM: Assumes full funding is received to support requirements.***
***Includes FY06 – FY08 dollars only.***

# JLW 155

Mr. James Shields
Project Manager

# Joint Program Manager Lightweight 155mm Howitzer
# M777/A1
# M119A2
# M111 (IPADS)

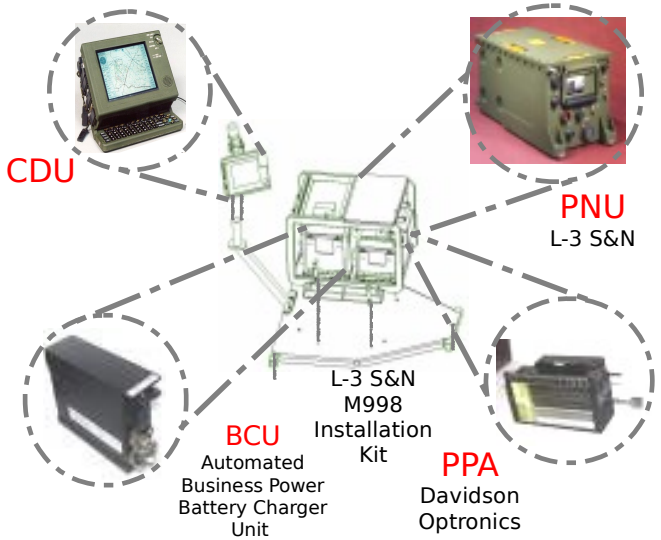
# JPM, Lightweight 155MM Howitzer Picatinny, NJ

**M777E1 Howitzer**

**M198**

**M119**

**Gun Laying and Positioning System**




**Improved Position and Azimuth Determining System (IPADS)**

**Projected End State Total (AAO):**

| | |
|---|---|
| M777A1: | 273 Army / 380 USMC |
| M198: | 741 Production Complete |
| M119: | 800 >400 New Production |
| IPADS: | 327 Army / 60 USMC |
| GLPS: | 511 In Final Production |

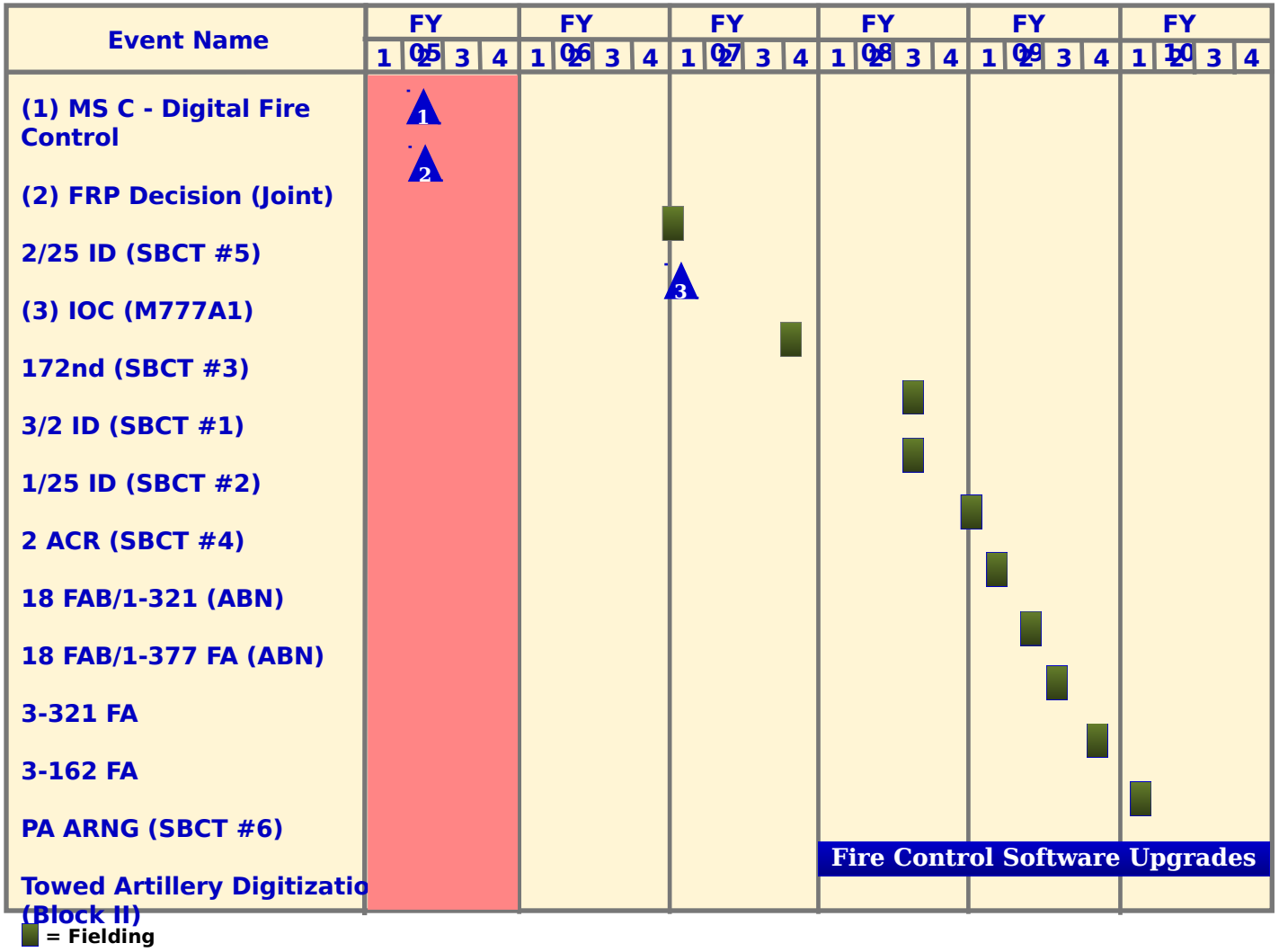
# LW155 Future Needs

- Areas of potential future benefit to LW155
- HW/SW Upgrades – Wireless Technology, Muzzle Velocity Sensor, On-Board Ballistics
- Power Management – Li Ion Batteries, Solar Charger, NATO Adaptors
- Weight Reduction
- Powered Drives (Rammer, Suspension, Azimuth, Elevation)
- Ammunition Handling/Transfer
- Alternative Ignition Technology

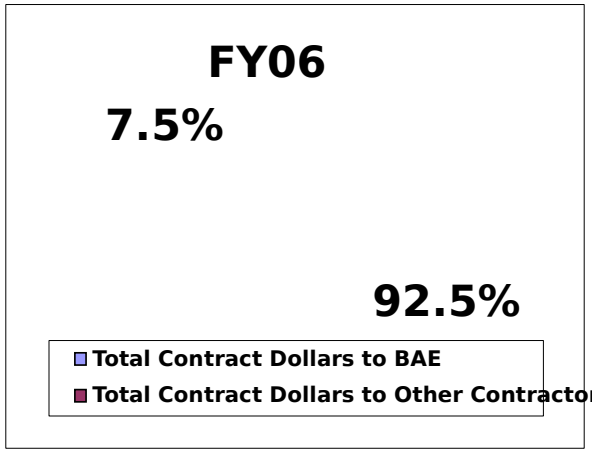
# M777/A1 Challenges & Opportunities for Industry

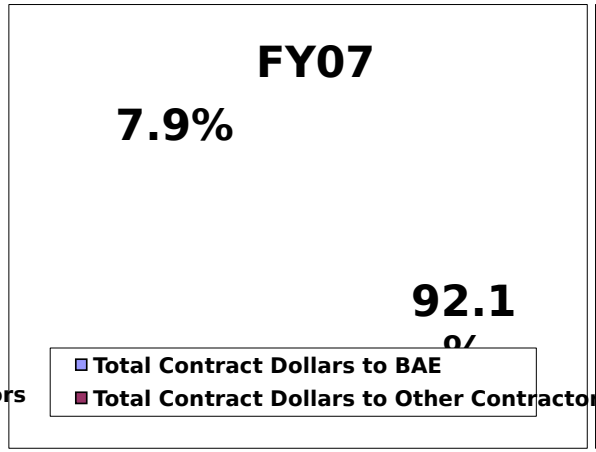
- BAE SYSTEMS is the Prime Contractor for the LW155 System
  - Managed From Barrow-In-Furness, UK
  - Integration & Assembly at Hattiesburg, MS
  - Value Chain Was Competitively Selected
  - Full-Rate Production Underway
- General Dynamics ATP (Burlington, VT) is Digital Fire Control Supplier
- Cannon is Government Furnished Equipment
- Software Upgrades Through ARDEC Software Center
- Full & Open Competition for Basic Issue Items

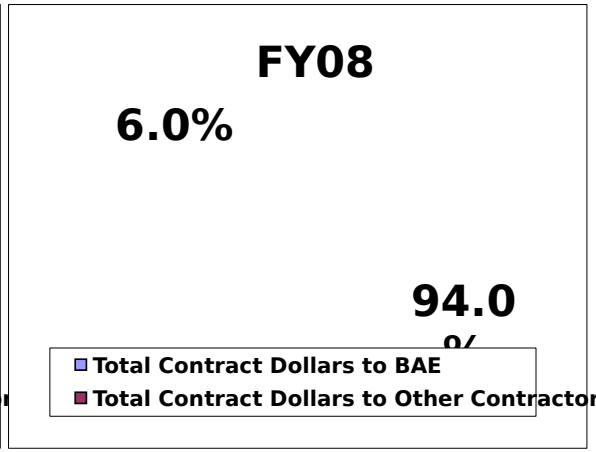
# M777 Program Schedule



# M777 Contractor Dollars
## FY06 – FY08




| DOLLARS IN M | | | | | |
|---|---|---|---|---|---|
| | Total Contract Dollars | Total Contract Dollars to go to BAE | Percent of Contract Dollars to go to BAE | Total Contract Dollars to go to Other Contractors | Percent of Contract Dollars for Other Contractors |
| FY 06 | **172.8** | **159.8** | **92.5%** | **13.0** | **7.5%** |
| FY 07 | **195.7** | **180.2** | **92.1%** | **15.5** | **7.9%** |
| FY 08 | **310.6** | **292.0** | **94.0%** | **18.6** | **6.0%** |

# M119A2
# Future Needs

- Areas of potential future benefit to M119A2
- Digital Fire Control Upgrade
- Unique Identification (UID) Marking
- Prime Mover Integration Kits
- Alternative Prime Mover to the HMMWV

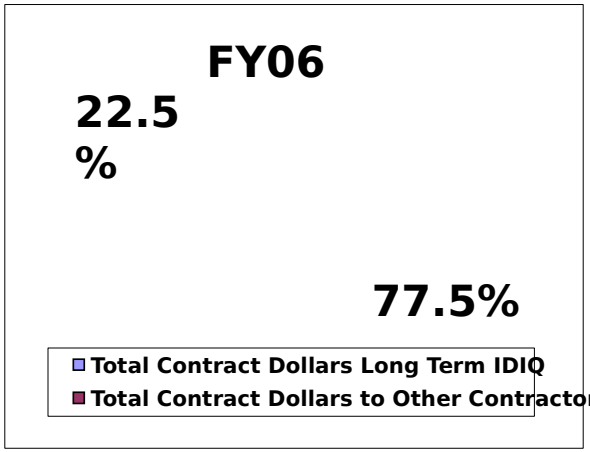
# M119 Challenges & Opportunities for Industry

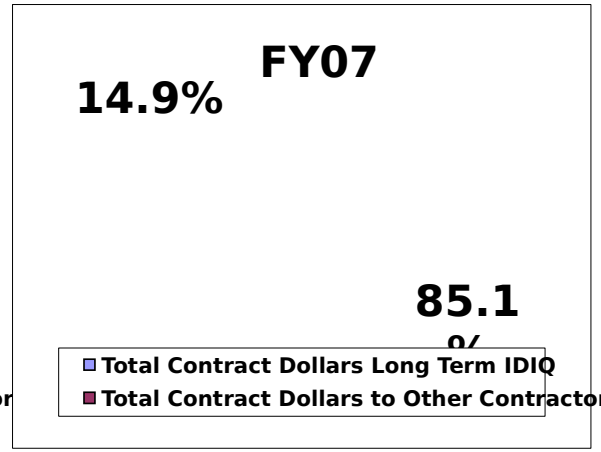
- Contract Support Services to Arsenals
  - RIA - Weapon Production and Integration
  - WVA – Cannon Production
- Digitization of M119A2
- Availability and Cost of 95-15 Steel - Long Term IDIQ Contracts Established with Several Vendors
- Competitive Selection of Optical Fire Control - Long Term IDIQ Contracts Established with Several Vendors
- Future opportunities for BII, Fielding, Production Consumables, etc.,

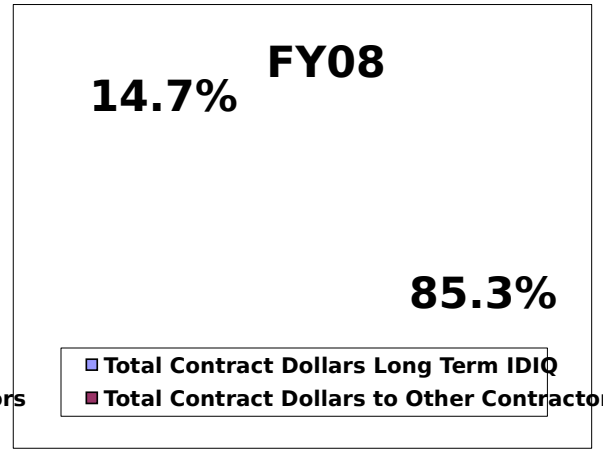
# M119 Program Schedule

| Task Name | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | | 2010 | | 2011 | | 2011 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H1 | H2 | H1 | H2 | H1 | H2 | H1 | H2 | H1 | H2 | H1 | H2 | H1 | H2 | H1 | H2 |
| Production | | | | | | | | | | | | | | | | |
| Delivery | | | | | | | | | | | | | | | | |
| Fielding | | | | | | | | | | | | | | | | |

# M119 Contractor Dollars
## FY06 – FY08




| DOLLARS IN M | | | | | |
|---|---|---|---|---|---|
| | Total Contract Dollars | Total Contract Dollars to Long Term IDIQ Contracts | Percent of Contract Dollars to go to BAE | Total Contract Dollars to go to Other Contractors | Percent of Contract Dollars for Other Contractors |
| FY 06 | **22.2** | **17.2** | **77.5%** | **5.0** | **22.5%** |
| FY 07 | **6.7** | **5.7** | **85.1%** | **1.0** | **14.9%** |
| FY 08 | **6.1** | **5.2** | **85.3%** | **0.9** | **14.7%** |

# M111 IPADS
# Future Needs

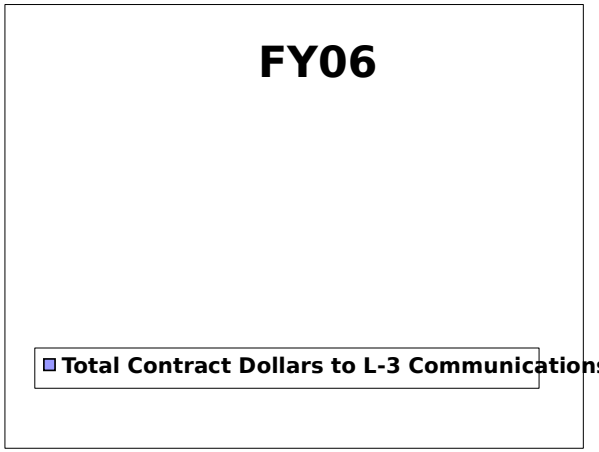
- Areas of potential future benefit to IPADS
- Integration of GPS
- Upgrade Hardware (Display/Screen, Hard Drive, etc.,)
- Power Management

# M111 (IPADS) Challenges & Opportunities for Industry

- L-3 Communications is the Prime Contractor for the IPADS
  - Indefinite Delivery Indefinite Quantity (IDIQ) Contract in Place
  - Production & Fielding Underway
- Future Production Reliant Upon Potential Supplemental Funding

# M111 (IPADS) Contractor Dollars

## FY06 – FY08




| DOLLARS IN M | | | | | |
|---|---|---|---|---|---|
| | Total Contract Dollars | Total Contract Dollars to go to L-3 Communication | Percent of Contract Dollars to go to L-3 | Total Contract Dollars to go to Other Contractors | Percent of Contract Dollars for Other Contractors |
| *FY 06 | **15.1** | **15.1** | **100%** | **0.0** | **0.0%** |
| FY 07 | **0.0** | **Not Presently Funded** | | | |
| FY 08 | **0.0** | **Not Presently Funded** | | | |

*** FY06 Extended Plan**

# Back Ups

# M707 Knight 1-N List

- Turret Ring Redesign
- Rotate turret and fire crew serve weapons simultaneously
- Incorporate Stand-Alone Computer Unit/Forward Observer Software/Force XXI Battle Command Brigade and Below
- Easier access to Combat Observation Lasing Team Commander
- Common Remote Stabilized Sensor System (CRS3)
- Targeting station/gunners protection kit designed for M707 Knight
- Integrated Electronic Technical Manuals
- Close Air Support radio Integration
- Web seating for the gunner

# BFIST M7/M3A3 1-N List

- Fire Support Sensor System (FS3)
- Desk Top Trainers

# POC's

| Combat Systems |
| --- |
| DPM – Mike Asada<br>(586) 574-7703 |
| **Robotics** |
| DPM – Duane Gotvald<br>(256) 955-7042 |
| **Stryker** |
| DPM – Mike Viggato<br>(586) 753-2189 |
| **JLW155** |
| DPM – Keith Gooding<br>(973) 724-5319 |